A CASE OF GARDNER'S SYNDROME

by

C. J. H. LOGAN and J. M. SLOAN

The Ulster Hospital, Dundonald, Belfast
and
Pathology Department, Royal Victoria Hospital, Belfast

THE association of multiple adenomatous polypi of the large intestine, osteomas of the skull and facial bones, subcutaneous fibromatous tumours and epidermoid cysts was recognised by Gardner and Richards in 1953. The condition shows autosomal dominant inheritance. Since then the syndrome has been enlarged and several additional features have been recorded (Morson and Dawson, 1979).

CASE REPORT

The patient is a young woman who was first seen at the Ulster Hospital in 1968 when she was aged 11 years. She was found to have hard swellings behind her right ear and behind the sterno-mastoid process on the right side. A tonsillar lymph gland was palpable on the right side but there was no other lymphadenopathy.

The patient was subsequently admitted to hospital in 1972 for investigation of subcutaneous swellings of her neck and back. A total of seven swellings were found in the regions of the right scapula, left shoulder, neck and upper chest wall. There was no lymphadenopathy. Biopsy of these swellings showed the features of benign calcifying epithelioma of Malherbe.

Further questioning revealed that the patient was delivered by Caesarean section in the 36th week of pregnancy because her mother had developed intestinal obstruction. Laparotomy performed at the same time showed the presence of multiple peritoneal secondary deposits. The patient's grandmother, two of her uncles and one aunt had died of bowel cancer. This family history together with the presence of skin tumours suggested a diagnosis of Gardner's syndrome and further investigation along these lines was carried out. At the time of her first admission to hospital in 1972 no sign of polyposis was seen at sigmoidoscopy but there was suspicion of multiple polypi on the barium enema examination and on barium meal and follow-through a few small lucent areas were noted in the small bowel suggestive of polypi.

At sigmoidoscopy six months later (March, 1973) many minute polypi and one large polyp measuring 1 × 2cm were seen. Histological examination showed that these were benign adenomatous polypi. Several more were discovered during 1973 and 1974, the largest being 1.5 × 1cm. Barium enema carried out in September 1974 showed only a small polyp in the ascending colon but the haemoglobin was noted to have fallen over the previous year. In view of the possibility of malignant change in polypi in Gardner's syndrome it was decided that she should have a prophylactic colectomy. This was carried out in 1974 and the terminal ileum was anastomosed to the rectum just below the peritoneal reflection. Examination of the specimen showed the presence of several colonic polypi of varying sizes, the two largest

measured 3 × 3.5cm and 2 × 1.5cm. Histological examination of these lesions showed that both contained areas of well differentiated adenocarcinoma. In one tumour cells had penetrated the muscle wall and were present at the serosal surface but local lymph nodes were not involved (Dukes type B). In the other the tumour was limited to the intestinal wall (Dukes type A). Examination of smaller polypi showed the features of adenomatous polypi but no frank carcinoma.

Follow-up continued with regular sigmoidscopic examinations and in November 1975 a 0.75cm diameter benign adenomatous polyp was removed by diathermy.

In November 1977 the patient was found to have a hard mass arising in the pelvis which was separate from the uterus. At laparotomy a large tumour was found in the mesentery of the small bowel arising over the right ureter at the brim of the pelvis. 30cm of terminal ileum were excised together with the tumour mass (Fig. 1) and a new ileo-rectal anastomosis was fashioned. A similar but smaller tumour was felt in the mesentery of the jejunum. The excised tumour was circumscribed and measured 13cm in diameter. It arose in the mesentery and was bounded by a loop of small bowel. Histologically the tumour was composed of mature fibrous tissue showing little evidence of mitotic activity or pleomorphism and the features were consistent with mesenteric fibromatosis. The ileal mucosa was studded by numerous tiny polypi measuring 2mm in diameter or less (Fig. 2). Several of these were examined histologically and all proved to be benign lymphoid polypi composed of lymphoid tissue often with germinal follicle formation.

Further sigmoidoscopies have been carried out at regular intervals. In July 1979 a hard mass was felt underneath the colectomy scar. This was thought to be a carcinomatous deposit and was excised. It proved to be a 2.5cm diameter tumour within the anterior abdominal wall and histological examination showed it to be a further fibromatous lesion consistent with a desmoid tumour. The patient was also noted to be slightly icteric at this time (bilirubin 36 μ mol/l. A liver scan showed

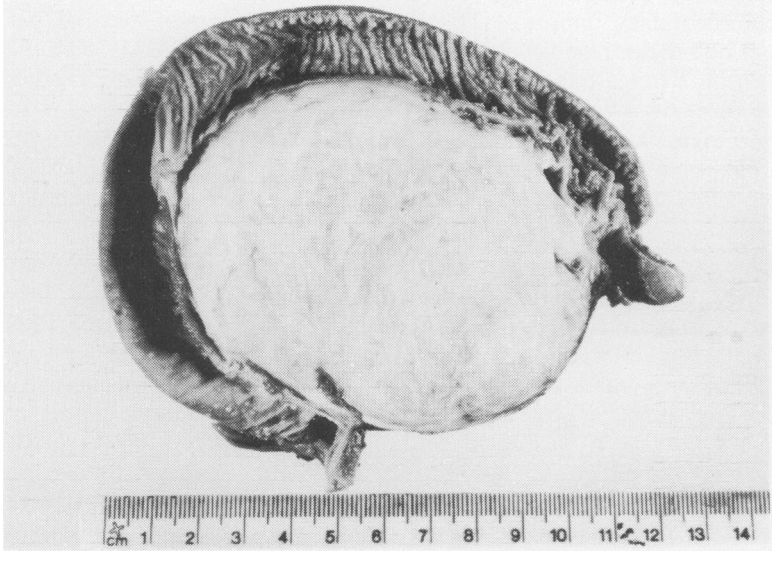

Figure 1.
Mesenteric fibromatosis with attached loop of ileum removed 3 years after colectomy. Ileal polypi are just visible.

Figure 2.
Close up view of surface of ileum showing numerous small lymphoid polypi.

moderate liver enlargement with patchy uptake in two or three areas suggestive of mild hepato-cellular dysfunction but with no evidence of malignant disease. In January 1980 a further swelling was found in the abdominal scar which was assumed to be a further desmoid tumour. A Pan-orthogram did not show any abnormality of the facial bones and examination of the patient's teeth did not show any evidence of caries etc.

DISCUSSION

This case shows several features of Gardner's syndrome but with the notable exception of osteomas of bone. A striking feature is the post-operative mesenteric fibromatosis which is an inconstant feature of Gardner's syndrome but was noted in a case of colonic polyposis by Pugh and Nesselrod (1945). The association with Gardner's syndrome was reviewed by Simpson et al (1964) who reported seven cases. Despite the alarming appearance and the possibility of mistaking the lesion for secondary carcinoma the condition is seldom malignant. However, the prognosis is variable (Simpson et al, Thomas et al. 1968) as ureteric or intestinal obstruction may ensue.

The small lymphoid polypi seen in the ileum are similar to those described in some cases of Gardner's syndrome (Thomford and Greenberger, 1968, Shull and Fitts, 1974). These are of more than academic interest as they may be mistaken for adenomatous polypi. Adenomatous polypi are being recognised with increasing frequency in the stomach (Watanabe, 1978), the duodenum (Schnur et al, 1973) and small intestine (Ross and Mara, 1974 and Case Records of Massachusetts General Hospital, 1978) in colonic polyposis syndromes. Similar polypi may also arise in the ileum in Gardner's syndrome after colectomy (Hamilton et al, 1979).

Adenomatous polypi have some malignant potential and while extra-colonic carcinoma in Gardner's syndrome appears to occur most often around the ampulla

of Vater (Parks et al. 1970, Schnur et al. 1973) it has also been reported in the ileum and jejunum (Case Records of Massachusetts General Hospital 1978). Thus it is important to distinguish adenomatous polypi from lymphoid polypi which do not appear to have malignant potential. Histological identification of small intestinal polypi in polyposis syndromes is advisable in order to avoid needless removal of a segment of ileum (Thomford and Greenberger, 1968).

Desmoid tumours arising close to the colectomy scar are a well documented but variable feature of Gardner's syndrome. Smith (1958) reported histologically confirmed desmoid tumours in abdominal incision scars in 6 out of 17 patients with one or more features of Gardner's syndrome. Schnur et al. (1973) consider that in this disease any incisional mass should be regarded as a desmoid tumour rather than recurrent carcinoma. The tendency to proliferation of fibrous tissue leading to mesenteric fibromatosis and/or soft tissue tumours is a most important feature of Gardner's syndrome (Lockhart-Mummery, 1967). The present case appears to support this point.

The skin lesions in this patient were unusual for Gardner's syndrome. Most reports indicate that they are either epidermoid cysts or sebaceous cysts distributed mainly in the scalp, face, neck and shoulders. The distribution in this case under discussion was similar to this but histological examination showed features of a pilomatrixoma (calcifying epithelioma) rather than epidermoid cysts. Characteristic ghost cells were prominent. This is a benign tumour showing differentiation toward hair cells (Lever and Schaumburg-Lever, 1975). The significance of this tumour in association with Gardner's syndrome is uncertain as it has not been reported before.

Treatment is always difficult and prolonged as the patients and their siblings must be followed-up for long periods. Once the diagnosis is made early, colectomy is indicated as the mortality from carcinoma of the bowel is high. An ileo-rectal anastomosis with frequent sigmoidoscopy follow-up saves the patient from an ileostomy and has proved very satisfactory in our patient. Awareness of all parts of the syndrome is important if unnecessary surgery is to be avoided.

Finally genetic counselling is mandatory for all patients but the moral and ethical aspects arising from sterilisation must be left to each individual patient.

SUMMARY

A case of Gardner's syndrome in a young woman is described. Mesenteric and subcutaneous fibromatosis is especially prominent and other important features include early development of colonic carcinoma and lymphoid polypi in the small intestine. An unusual aspect is that the skin tumours examined proved to be pilomatrixomas (calcifying epitheliomas of Malherbe) rather than the epidermoid or sebaceous cysts usually described in this syndrome.

REFERENCES

CASE RECORDS OF THE MASSACHUSETTS GENERAL HOSPITAL (1978), Case 47-1978. *New England Journal of Medicine,* **299,** 1237.

GARDNER, E. J. and RICHARDS, R. C. (1953). Multiple cutaneous and subcutaneous lesions occurring simultaneously with hereditary polyposis and osteomatosis. *American Journal of Human Genetics,* **5,** 139.

HAMILTON, S. R., BUSSEY, H. J. R., MENDELSOHN, G., DIAMOND, M. P., PAVLIDES, G., HUTCHEON, D., HARBISON, M., SHERMETA, D., MORSON, B. C. and YARDLEY, J. (1979). Ileal adenomas after colectomy in nine patients with adenomatous polyposis coli/Gardner's syndrome. *Gastroenterology,* **77,** 1252.

LEVER, W. F. and SCHAUMBERG-LEVER, G. (1975). *Histopathology of the skin.* Fifth Edition. Lippincott and Co., Philadelphia.

LOCKHART-MUMMERY, H. E. (1967). Intestinal polyposis: the recent position. *Proceedings of the Royal Society of Medicine,* **60,** 381.

MORSON, B. C. and DAWSON, I. M. P. (1979). *Gastrointestinal Pathology.* Second Edition. Blackwell Scientific Publications, Oxford.

PARKS, T. G., BUSSEY, H. J. R. and LOCKHART-MUMMERY, H. E. (1970). Familial polyposis associated with extracolonic abnormalities. *Gut,* **11,** 323.

PUGH, H. L. and NESSELROD, J. P. (1945). Multiple polypoid disease of the colon and rectum. *Annals of Surgery,* **121,** 88.

ROSS, J. E. and MARA, J. E. (1974). Small bowel polyps and carcinomas in multiple intestinal polyposis. *Archives of Surgery,* **108,** 736.

SCHNUR, P. L., DAVID, E., BROWN, P. W., BEAHRS, O. H., ReMINE, W. H. and HARRISON, E. G. (1973). Adenocarcinoma of the duodenum and the Gardner syndrome. *Journal of the American Medical Association,* **223,** 1229.

SHULL, L. N. and FITTS, C. T. (1974). Lymphoid polyposis associated with familial polyposis and Gardner's syndrome. *Annals of Surgery,* **180,** 319.

SIMPSON, R. D., HARRISON, E. G. and MAYO, C. W. (1964). Mesenteric fibromatosis in familial polyposis. *Cancer,* **17,** 526.

SMITH, W. G. (1958). Multiple polyposis, Gardner's syndrome and desmoid tumours. *Diseases of Colon and Rectum,* **1,** 323.

THOMAS, K. E., WATNE, A. L., JOHNSON, J. G., ROTH, E. and ZIMMERMANN, B. (1968). Natural history of Gardner's syndrome. *American Journal of Surgery,* **115,** 218.

THOMFORD, N. R. and GREENBERGER, N. J. (1968). Lymphoid polyps of the ileum associated with Gardner's syndrome. *Archives of Surgery,* **96,** 289.

WATANABE, H., ENJOJI, M., TSUNEYOSHI, Y. and OHSATO, K. (1978). Gastric lesions in familial adenomatosis coli. *Human Pathology,* **9,** 269.